AMENDMENTS TO THE SPECIFICATION

In the Specification:

-- Please amend the paragraph beginning at page 2, line 30 as follows:

One aspect of the present invention provides a system to monitor temperature of a substrate, such as a mask, reticle or wafer. The system includes one or more temperature sensors operative to sense temperature of the substrate. A control system receives temperature information based on the sensed temperature and provides a control signal based on the temperature information. In a particular aspect, an exposing source exposes the substrate ~~for~~ based on the control signal. By way of example, the temperature information can be collected during one or more exposure cycles, such that the control system can control exposure time of the substrate for subsequent exposure cycles based on the temperature information previously collected for that substrate.

-- Please amend the paragraph beginning at page 5, line 4 as follows:

The reticle 12 typically is employed in a step-and-scan configuration in which the reticle pattern is exposed onto a wafer by synchronously scanning the reticle 12 and an associated wafer ~~wafer~~. In situations when only portions of the reticle 12 are scanned at a time, the portions being scanned can become hotter than portions not being scanned. Consequently, the portion undergoing scanning can thermally distort as a result of thermal expansion thereof, which can cause overlay errors. The significance of such overlay errors further increases as critical dimensions for semiconductor devices continue to decrease.

-- Please amend the paragraph beginning at page 7, line 3 as follows:

In accordance with an aspect of the present invention, one or more temperature sensors 80 and 82 are operative to sense temperature characteristics of the reticle 52. In the example of FIG. 2, the temperature sensors 80 and 82 are depicted as being attached to or integrated into the reticle 52. While, for purposes of simplicity of illustration, two

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such sensors 80 and 82 are shown in FIG. 2, those skilled in the art will understand and appreciate that a greater number of such sensors usually used to monitor temperature of the reticle 52 ~~202~~. Each of the sensors is operative to sense temperature associated with a part of the reticle where the sensor is located. It further will be understood and appreciated that appropriate sensors (*e.g.*, thermistors) can be attached at appropriate reticle locations. Other types of sensors could be integrated into the supports 64, implemented as part of a pellicle attached to the reticle, or noncontact sensors (*e.g.*, thermal imaging sensors), in accordance with an aspect of the present invention. When thermal imaging is employed, appropriate filtering of thermal data can be employed to mitigate interference of the radiation from the exposing source 58.

-- Please amend the paragraph beginning at page 7, line 18 as follows:

A control system 86 ~~is~~ receives temperature information from the temperature sensors 80 and 82. For example, the temperature sensors 80 and 82 could be electrically coupled to the control system 86 by a circuit formed of the supports 64, which include electrically conductive portions that engage contacts coupled to the sensors 80 and 82. Alternatively, non-contact (*e.g.*, inductive or wireless) communication architectures also could be used to provide temperature information from the sensors 80 and 82 at the reticle 52 to the control system 86.

-- Please amend the paragraph beginning at page 7, line 29 as follows:

The control system 86 also is coupled to the exposing source 58 and the loading system 78. The control system 86 is operative to control the exposing source 58 to emit radiation for a determined exposure time. For example, the control system 86 controls the exposing source 58 to emit the light 60, such that the reticle 52 is illuminated for a desired time period with a desired wavelength of light. In accordance with an aspect of the present invention, the control system 86 controls the exposure time based on the sensed temperature condition of the reticle 52. The control system 86 ~~58~~ also can receive feedback from the exposing source 58, such as a measure of the energy and/or wavelength of the light 60. After a given part of the wafer has been exposed for the

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desired exposure time, the control system 86 is operative to cause the positioning system to step to the wafer portion to be scanned.

-- Please amend the paragraph beginning at page 8, line 7 as follows:

The system 50 also can include a source 88 of an inert gas, such as Nitrogen (N_2) or Helium (He_2). One or more nozzles 90 are connected with the gas source 88 to enable flow of inert gas into the exposure chamber <u>56</u> ~~204~~. The control system <u>86</u> ~~218~~ is coupled to the gas source 88, such as to selectively control the flow of gas from the nozzle 90. The control system 86 further can monitor and control the ambient temperature and pressure conditions within the chamber 56, as well as moisture within the chamber. In an ambient environment, O_2 and H_2O tend to attenuate shorter wavelength radiation between a source of illumination and the mask or reticle <u>52</u> ~~202~~. The flow of inert gas into the chamber 56 thus provides an environment that facilitates radiation of the reticle 52 for shorter wavelength radiation, such as about 157 nm or less. The inert gas further can help cool the reticle 52, such that as the reticle temperature decreases during exposure, the control system 86 can increase the exposure time of the reticle. As reticle temperature decreases, the control system 86 can control the exposing source 58 to increase exposure time and/or reduce time between exposure cycles.

-- Please amend the paragraph beginning at page 9, line 1 as follows:

By way of further example, the control system 86 can be programmed and/or configured to generate a topographic map of the reticle 52, which the surface area divided into a plurality of zones or regions. Associated temperature information derived based on the information collected by the sensors 80, 82 can be mapped into corresponding zones to provide a temperature profile for the reticle <u>52</u> ~~152~~. The temperature profile can be further employed to propagate a reticle temperature database, which is stored in the memory 94. The database can include temperature condition data for each reticle zone as a function of time. Temperature profiles thus can be stored in memory 94 for the current and previous exposure cycles. The memory 94 further can be programmed to analyze reticle temperature characteristics over time to discern whether adjustments to exposure

time are desired. When a temperature condition of the reticle (or a portion thereof) is determined to be outside of an expected temperature condition, the control system 86 can adjust the exposure time accordingly.

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